

4054

TEKTRONIX

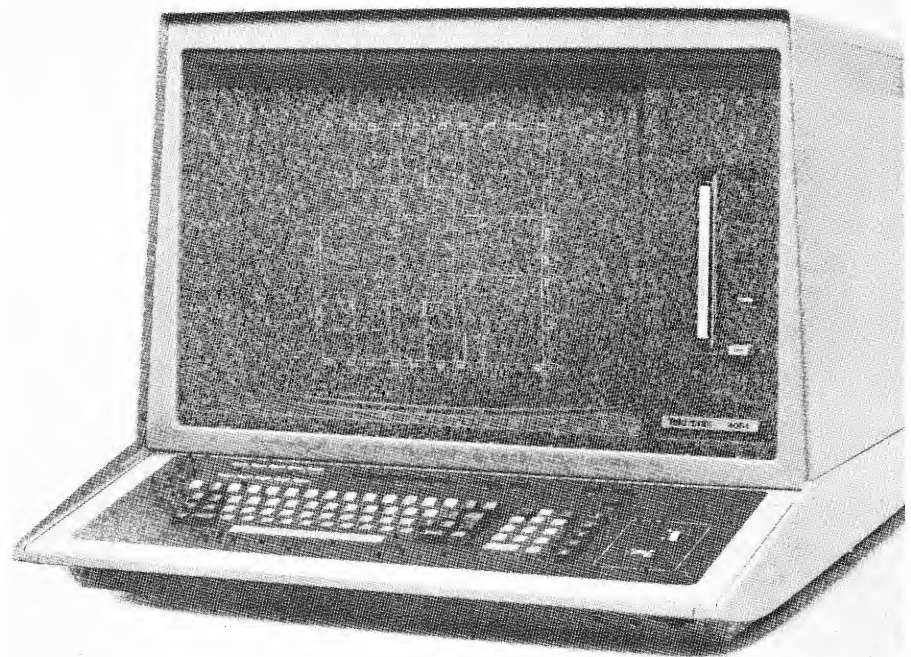
**19" screen desktop
computing system
with enhanced graphics
and powerful BASIC.**

Graphic Computing System

Unequaled graphics and powerful, fast computing in an integrated desktop computer. The 4054 is the only desktop computer that combines easy-to-learn, extended BASIC with the unique features of a large-screen, high resolution Tektronix display. For rapid calculation, the 4054 has a fast processor with microcoded floating point. The state-of-the-art graphics capabilities of the 4054 provide for demand hard copy of any combination of text and high-density graphics (with optional hard copy unit). Fast processing coupled with simultaneous text and graphics display offer an excellent fit for many sophisticated graphics environments. In addition, the 4054's memory capacity can be expanded from a standard 32K bytes, up to 64K bytes. The 4054 comes standard with a GPIB interface conforming to IEEE Standard 488-1975. Through this interface, a variety of printers, plotters, graphics tablets and/or mass storage units may be connected, offering a powerful solution for most application requirements.

The 4054 features software compatibility with the rest of the 4050 Series of desktop computers. Our 4051 set the standard for high performance, affordable desktop computing. The 4052 utilizes a new processor and offers a larger memory capacity. Programs developed on the 4051 and 4052 will operate on the 4054, giving 4054 users access to a wealth of PLOT 50 software, already written and debugged, thus reducing program development costs often associated with new systems.

The 4050 Series has a long list of proven peripheral products. GPIB



(General Purpose Interface Bus) and RS232-C interfacing coupled with easy-to-program BASIC I/O commands allow considerable versatility in designing your own system. Furthermore, additional peripherals can be readily integrated as your application needs change or grow.

Superior Graphic and Alphanumeric Display. The 4054, with 4096 (x) by 4096 (y) resolution — 13 million addressable points — has all the graphics capability you will need for even the most complex display. With ASCII stroke-generated characters programmable in four sizes and eight fonts, the 4054 has the tools to alphanumerically dress up your output to suit any professional requirement, including previewing of 132 column line printer output.

For your graphing needs there are 36 distinct dot-dashed patterns,

selectable under program control, providing for maximum effect of represented data. For interactivity the 4054 has a thumbwheel driven, true cross-hair cursor. All of these features are implemented using the extended BASIC of the 4054.

Friendly extended BASIC provides the simplicity desired by the beginner together with the flexibility and power required by the experienced programmer. Device independent keywords make program and data input/output operations easy in either binary or ASCII formats. Fast, built-in BASIC functions such as SINE, LOG, SQR, etc. plus a complete set of matrix functions provide powerful computation at your fingertips. Add easy-to-use BASIC graphic commands such as MOVE, DRAW, etc. and it is easy to see the potential uses of the 4054.

Data Communications. With the Data Communications Interface (Option 1) the 4054 can communicate asynchronously with a host computer at rates up to 9600 Baud. In terminal mode, the 4054 emulates our popular 4014-1 Graphic Display Terminal, and allows direct data transfer between the built-in cartridge tape drive and host computer.

Excellent Product Quality. The 4054, like all Tektronix products, is rigorously tested at all levels of manufacturing. The benefits of this concentrated effort to our customers are product excellence and reliability. To continue this commitment to product excellence after the sale, Tektronix offers a full one year warranty and a worldwide network of service and technical assistance.

Central Processing Unit

Type: Bit-slice technology.

User memory workspace:

Standard 32K bytes

Opt. 24 64K bytes
(56K user)

Programming Language: BASIC with numerous extensions.

Dynamic Range:

$\pm 10^{-308}$ to $\pm 10^{+308}$

Numeric Accuracy:

14 decimal digits with 12 displayed.

Calculator keyboard: Statements or calculations may be executed immediately from the keyboard.

Keyboard

Standard typewriter keyboard.

Full 128 ASCII character upper and lower case with auto repeat.

10 key numeric and 5 math function calculator key pad.

5 line/character editor keys.

User definable function keys; 10-shiftable to 20.

Keys for single step program execution, auto numbering, rewinding magnetic tape, making copies, or automatic loading and execution of the first program on tape.

Tape Drive

3M® DC300A cartridge.

300K bytes maximum.

Rewind speed: 90ips

Search/read speed: 30ips

Structure: 256 bytes with header (128 byte headerless format selectable for 4923 tape compatibility).

Standard Built-in Functions

Math and Trigonometric:

* (multiply)

/ (divide)

± (add/subtract)

↑ (power), SQR

LOG, EXP(e^x), LGT(10)

SIN, ASN, COS, ACS

TAN, ATN, PI

ABS, MIN, MAX

SGN, INT, RND (random)

SUM (matrix)

DEF FN (define function)

Relational: =, >, <, <>, =>, =<

Logical: AND, OR, NOT

Assignment: DIM, LET (optional),

Character String: & (concatenate)

CHR (decimal to ASCII)

ASC (ASCII to decimal)

STR (numeric to ASCII string)

VAL (ASCII string to numeric)

SEGMENT, POSITION

LENGTH, REPLACE

Graphic Commands:

MOVE, DRAW

RMOVE, RDRAW (relative)

VIEWPORT, WINDOW

SCALE, AXIS, ALPHASCALE

ROTATE, ALPHAROTATE

GIN (input x, y), POINTER

DASH (Dot-dashed patterns)

Program Preparation and Debug:

LIST

REM (remarks)

REN (renumber)

Matrix Commands: TRN

(transpose), IDN (identify), MPY

(matrix product), DET (determinant), INV (inverse)

Memory Management:

DELETE (variable or program)

MEMORY (bytes available)

SPACE (bytes required to store current program on tape)

Program Flow: FOR . . . TO, NEXT, GOSUB, RETURN, IF . . . THEN, RUN, STOP, END, GO TO, GO TO . . . OF, GOSUB . . . OF

Environmental:

INIT (initialize)

SET (degrees, radians, grads)

FUZZ

SET CASE (upper or upper/lower)

SET KEY, NO KEY

SET FONT (U.S., European, other)

SET TRACE, NORMAL

CHAR (4 character sizes)

Interrupt Handling: POLL, WAIT,

ON . . . THEN, OFF

Mag. Tape: FIND, MARK, TLIST,

CLOSE, TYPE, KILL, MTPACK

System Control: CALL, COPY,

HOME, PAGE

Data Input/Output: READ, WRITE, RBYTE, WBYTE, DATA, RESTORE, INPUT, PRINT, PRINT USING, IMAGE

ASCII Program Input/Output: OLD, APPEND, SAVE, SECRET.

Binary Program Input/Output:

BOLD, BAPPEN, BSAVE, SECRET.

CRT

Type: Direct View Storage CRT.

Display area: 38.5cm (15") wide, 28.2cm (11") high, 48.2cm (19") diagonal.

Alphanumerics: Four program selectable formats.

72 characters per line with 35 lines per display.

79 characters per line with 38 lines per display.

119 characters per line with 58 lines per display.

132 characters per line with 64 lines per display.

Character set: Full ASCII, upper/lower case, high quality, stroke generated characters.

Special fonts: Selectable under program control — Swedish, German, British, Spanish, Danish/ Norwegian, Graphic and Business.

Graphics:

Vector drawing time—15kcm/sec.

Addressable resolution: 4096 (x) by 4096 (y) — 12 bits.

Viewable resolution—4096 (x) by 3125 (y).

Dot-dashed vectors, programmable in 36 unique patterns.

Cross-hair cursor with built-in thumbwheels for interactivity.

Visibility: Flicker-free, easy-on-the-eyes display.

Copier: Compatible with Tektronix hard copy units.

General Purpose Interface Bus (GPIB)

The Tektronix GPIB interface conforms to IEEE Standard 488-1975. Transfer is byte serial, bit parallel. External devices can be serviced via 4054 BASIC language commands for interrupt, enable/disable, polling and data transfer.